IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant(s):	Steven D. Kloos et al.	Examiner: Krishnan Menon	
Serial No.:	10/516,579	Group Art Unit: 1797	
Filed:	April 21, 2005	Docket No.: 1330.012US1	
Customer No.:	49747	Confirmation No.: 9930	
Title:	MEMBRANE DEVICES AND DEVICE COMPONENTS		

APPELLANT'S REPLY BRIEF UNDER 37 C.F.R. 41.41

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Examiner's Answer mailed September 25, 2009, please see the remarks below:

REPLY

REMARKS

The Examiner's Answer Brief ("Examiner's Answer"), dated September 25, 2009, includes similar grounds for rejection as the last Final Office Action. Appellant respectfully maintains that the Appeal Brief (which is incorporated herein by reference) and this Reply Brief overcome the original grounds of rejections.

Comments by Appellant Relating to the Examiner's Answer

The Appellant has reviewed the Answer, and believes the statements in the original Appeal Brief remain compelling. In responding to the Answer, the Appellant wishes to address several points made by the Examiner in the Response to Argument section of the Answer. The corresponding pages of the Answer will be used to reference each of these points.

In addition, any lack of reference in this Reply Brief to a particular argument in the pending Appeal Brief is not to be construed as an admission that the Appellant agrees with any of the statements in the Examiner's Answer. Appellant asks that the statements made in Appellant's pending Appeal Brief be considered in full, in addition to the statements included with this Reply Brief.

A. ***Discussion of the rejection of claims 89-92 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.***

The Examiner states at page 8 of the Examiner's Answer that:

> "In the actual arguments, appellant cites various portions of the specification, none of which provide any disclosure in support of the limitation in claim 89, "the permeate carrier having a void volume greater than 50 percent". Page 12, line 17 - page 13, line 10, cited in the summary of claimed subject matter as well as in the argument, does not provide such support. Support is lacking for the greater than 60%, greater than 70% and greater than 80% in the dependent claims 90-92 as well."

Appellant respectfully traverses the assertions. Appellant respectfully submits that the

specification does provide disclosure commensurate with the scope of void volumes recited in claims 89-92. Appellants' specification at page 12, line 17 through page 13, line 10 also describes the permeate carrier 110 having a void volume greater than 50 percent (see, e.g., the identified NALTEX layers that are used as a permeate carrier in Appellants' invention). These portions of the specification, among others, enable a person of ordinary skill in the art to make and use the invention commensurate with the scope of claims 89-92.

Appellant further notes that the Examiner appears to at least partially acknowledge that the cited NALTEX layers may have void volumes in the claimed range by stating "While it is possible that the cited materials for the spacers may have void volumes falling within the range claimed, it is not possible for the examiner to determine if they, in fact, have the stated void volume, and they would not support the ranges as claimed." Appellant respectfully submits that one of ordinary skill in the art know would know which materials would include void volumes as recited in the claims.

B. *Discussion of the rejection of claims 74-92 under 35 U.S.C. 112, second paragraph, as failing to comply with the written description requirement.*

The Examiner states at page 10 of the Examiner's Answer that:

> "The Examiner respectfully submits that there can be many possible materials that would have the H value for the combination of fluids, membranes and the spiral wound design of the module that would fall within the range of "0.045 or less" as claimed, and thus one of skill in the art would not able to determine the metes and bounds of the claimed limitation."

Appellant respectfully agrees with the portion of the assertion that different combinations are possible to yield the recited H value but disagrees with the portion of the assertion that one of ordinary skill in the art would not be able to determine the metes and bounds of the claim. The Examiner recites at length in the rejection how the art describes determining H value and Appellant submits that one of ordinary skill would be well aware of this type of information (as well as a great deal of other information related to H values). Therefore, one of ordinary skill in the art would be well versed with an H value as recited in the claims.

The Examiner further states at page 10 of the Examiner's Answer that:

> "Appellant's disclosure, paragraphs 0034-0036 of the application publication provide further evidence for this indefiniteness. Comparison between the tables in pages 5 and 6 show for the same spacer material, Delstar S111, the H value of 0.05 in the table of page 5, where as it is 0.03 in the table of page 6. (see the application publication)"

Appellant respectfully traverses the assertion because Appellant's specification describes a variety of embodiments and materials that can be used in those embodiments. However, in the embodiments that are recited in the claims, the H values are clearly recited and some materials in those claimed embodiments may be used in the claimed membrane elements and other materials may not be used. Appellant respectfully submits that based on a reading of the claims one of ordinary skill in the art would be able to determine the appropriate materials after reviewing the specification and utilizing the level of skill for one of ordinary skill in the art.

The Examiner further states at page 11 of the Examiner's Answer that:

> "Spiral wound membrane art is a very crowded art, and there are many different designs commercially available, and many of them may actually read on this claim limitation. Thus this factor H, while very useful as a design tool, is indefinite for defining a specific product or range of products."

Appellant respectfully traverses the assertions. Appellant respectfully submits that merely because a variety of different items/materials may be used that does not render a claim indefinite. There are many instances where a variety of items could be used to meet a claim limitation but that does not render the claim indefinite. As an example, if a claim recites an "arm" that does not render the claim indefinite because a variety of different arms of all shapes, materials and sizes could be used. As another example, if claim recites a "processor" that does not render the claim indefinite because a variety of different electronic devices (made from a variety of different materials) could be considered a processor.

C. *Discussion of the rejection of claims 74-92 under 35 U.S.C. 103 over the combination of Lien and Uhlinger.*

The Examiner further states at page 12 of the Examiner's Answer that "It is agreed that Lien does not explicitly teach of a permeate carrier of H value of about 0.045 atm--cc/gm or less in combination with a membrane device capable of at least 50% MgS04 rejection, etc." Appellant agrees with the assertions and respectfully submits that the assertions are some of

major reasons that the claims should be allowed.

The Examiner further states at pages 12 of the Examiner's Answer that "What Lien teaches is optimizing the permeate channel design to improve the membrane module efficiency." Appellant respectfully fails to see the relevance of the assertion as just about every piece of art in this technology area could be considered as attempting to improve module efficiency.

The Examiner further states at page 13 of the Examiner's Answer that "Thus Lien teaches how to optimize the permeate channel design using H value to improve efficiency." Appellant respectfully traverses the assertion and respectfully submits that there is no discussion in the cited reference relating H-value as it relates to improving membranes.

The Examiner further states at page 13 of the Examiner's Answer that "What Lien does not teach in the reference is only a membrane that can reject MgS04 at the specified conditions that is used in combination with the specific design of permeate channels." Appellant agrees with the assertion and respectfully submits that the assertion is another major reason that the claims should be allowed.

The Examiner further states at page 13 of the Examiner's Answer that:

> "However, this would be obvious to one of ordinary skill in the art because nanofiltration and reverse osmosis membranes that reject MgS04 to greater than 50% at the conditions specified are well known in the art and commercially available, and one would make optimal designs based on available technologies, such as what is taught by Lien, to obtain modules of improved performances"

Appellant respectfully traverses the assertions. Appellant respectfully submits that only description relating to a membrane that rejects greater than 50% MgSO4 along with the other elements recited in the claims is found in Appellant's specification and the Examiner is impermissibly using what Appellant teaches in the specification against Appellant.

The Examiner further states at page 14 of the Examiner's Answer that "Also, the reverse osmosis membranes as taught by Lien inherently reject MgS04 to greater than 50% at the conditions recited. Appellant has not provided any evidence to the contrary." Appellant respectfully traverses the assertion as to Lien "inherently" rejecting the MgSO4 *at the conditions recited*. Appellant respectfully submits that it is the Examiner that is required to show where the cited references describe the claim limitations in order to make a proper rejection.

The Examiner further states at page 14 of the Examiner's Answer that "The Examiner

also submits that the void volumes of the Conwed and Nalle materials recited in Table 2 above are greater than 50%, or even 80% - same or similar material as used by the Appellant. Appellant has not provided any evidence to the contrary." Appellant respectfully traverses the assertion relating to the void volumes that are disclosed in Table 2 of Lien and again respectfully submits that it is the Examiner that is required to show where the cited references describe the claim limitations in order to make a proper rejection.

The Examiner further states at page 14 of the Examiner's Answer that:

> "The limitation in claim 74, "a feed carrier that is used as a permeate carrier" does not limit the claims any further because it does not further define any particular structure [This limitation also is indefinite because it is unclear what appellant is trying to limit: feed carrier or permeate carrier? However, based on appellant's disclosure, it is assumed that the permeate carrier used in Appellant's claim 74 is normally used as a feed carrier in the RO industry]"

Appellant respectfully traverses the assertions. Appellant respectfully submits that only disclosure relating to using a feed carrier as a permeate carrier is found in Appellant's specification. Appellant respectfully submits that Appellant's specification clearly recites the advancement that is associated with using a feed carrier as permeate carrier. As stated in Appellants' specification, the improved thin film composite membrane elements in this invention not only show improved efficiencies which yield higher flow rates they also surprisingly show improved salt rejection rates. Lien does not contemplate that using a feed carrier as a permeate carrier would lead to improved membrane salt rejection rates.

The Examiner further states at page 14 of the Examiner's Answer that:

> "Even though the Lien reference does not explicitly state that a feed carrier material could be used as a permeate carrier material, both the Conwed and the Nalle (now DelStar) materials listed in Table 2 are feed carrier materials. Appellant has not disputed this fact."

Appellant initially notes that the Examiner acknowledges that Lien does not explicitly disclose using a feed carrier as a permeate carrier. Appellant respectfully (and strongly) traverses the rest of the assertion and does in fact dispute that Lien discloses using a feed carrier as a permeate carrier.

The Examiner further states at page 15 of the Examiner's Answer that "It is agreed that Uhlinger does not explicitly teach rejection of MgS04 at 65 psi pressure and 10 cm/sec average

feed channel cross-flow velocity at 77F." Appellant agrees with the assertion and again respectfully submits that the assertion is one of major reasons that the claims should be allowed.

The Examiner further states at page 15 of the Examiner's Answer that "However, the membrane used is commercially available membranes which inherently reject MgS04 at these conditions. Applicant has not provided any evidence to the contrary." Appellant respectfully traverses the assertion as to Uhlinger "inherently" rejecting the MgSO4 *at the conditions recited*. Appellant again respectfully submits that it is the Examiner that is required to show where the cited references describe the claim limitations in order to make a proper rejection.

The Examiner further states at page 15 of the Examiner's Answer that:

> "The rejection has *prima facie* shown that Lien alone would make the claims obvious. In addition, it would be obvious to one of ordinary skill in the art to use the specific membranes taught by Uhlinger in the teaching of Lien to design modules as taught by Lien to make high efficiency NF and RO membranes. Alternately, one of ordinary skill in the art would make the NF and RO membranes of Uhlinger more efficient by using the design and optimization principles of Lien. Thus there is a strong prima facie case of obviousness against patentability of Appellant's claims"

Appellant respectfully traverses the assertions and again notes just about every piece of art in this technology area could be considered as attempting to improve membrane efficiency. Appellant again respectfully submits that the membrane elements which are disclosed in Uhlinger suffer from all of the drawbacks that are associated with conventional membrane elements (see Appellant's spec. at page 3, lines 13-30; page 4, lines 5-20; page 7, line 25 through page 8, line 4; and page 8, lines 9-10).

The Examiner further states at page 16 of the Examiner's Answer that "Void volumes of the spacer material are inherently as claimed; appellant has not provided any evidence to the contrary. Particularly, the void volume of the Nalle (now, DelStar) and Conwed materials as taught by Lien in Table 2 would be greater than 50%." Appellant respectfully traverses the assertion that Lien "inherently" describes void volumes *as recited in the claims*.

The Examiner further states at page 16 of the Examiner's Answer that "Appellant's specification discloses the teachings of the Lien reference with some newly added optimized data points and do not describe any new invention." Appellant respectfully traverses the assertion because the claimed membrane element meets the long felt need of a high flow membrane

element that improves salt rejecting capability during relatively low pressure operation, which is not described by either of the cited references.

The Examiner further states at page 16 of the Examiner's Answer that "Argument that claims recite an RO membrane that has very low H value, which have never existed before: this argument is further evidence of the confusion Appellant creates about the "H-value". Claims recite H-value for the permeate carrier."

Appellant respectfully agrees with the very last part assertion as the invention relates to a membrane element that uses a feed carrier as a permeate carrier where permeate carrier that has an H-value of about 0.045 atm-sec/gm or less. The permeate carrier separates first and second thin film composite membrane sheets in order to form a membrane element that provides unexpected and superior results (see Appellant's spec. at page 8, lines 10-20; page 9, lines 15-20; and page 12, line 28 through page 13, line 20) over conventional membrane elements (which is not described by either of the cited references).

CONCLUSION

Appellants respectfully submit that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Appellants' representative at (262) 646-7009 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account 19-0743.

Respectfully submitted,

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